

Abstract Submitted
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Local Dynamics of Granular Size Segregation ADAM KEITH, JAMES PUCKETT, KAREN DANIELS, NC State University — We seek to quantify the local mechanisms which drive granular size segregation, using a two-dimensional system. We perform experiments using a bi-disperse mixture of disks floating on a tilted air table, agitated by bumpers at the bottom edge. A layer of large particles initially placed at the bottom of the system mixes with a layer of small particles above it, eventually resegregating to the upper surface. We record the position of each particle and measure the average segregation velocity as a function of local packing fraction ϕ for all particles and local concentration c of small particles. The velocity of the large particles is strongly dependent on packing fraction; particles in regions of lower ϕ tend to move downward, while those in regions of higher ϕ ascend through the material. In contrast, we find that the effect of local concentration c is weak.

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